CLAIMS

1. Optical component alignment apparatus comprising:

a supporting substrate having a component mounting surface;

thermally conductive material positioned on a first area of the component mounting surface of the supporting substrate;

an optoelectronic component positioned on the thermally conductive material, the optoelectronic component defining an optical axis substantially parallel to the component mounting surface of the supporting substrate;

a conductive layer positioned on the component mounting surface of the supporting substrate adjacent the thermally conductive material;

a dielectric layer formed on the conductive layer, the conductive layer and the dielectric layer defining a selected bondline thickness; and

an optical block fixedly positioned on the dielectric layer, the optical block defining an optical axis substantially parallel

with the component mounting surface of the supporting substrate, and the bondline thickness being selected to align the optical axis of the optical block with the optical axis of the optoelectronic component.

2. Optical component alignment apparatus as claimed in claim 1 wherein the thermally conductive material includes a heat sink.

3. Optical component alignment apparatus as claimed in claim 1 wherein the optoelectronic component positioned on the thermally conductive material includes a laser.

4. Optical component alignment apparatus as claimed in claim 1 wherein the optical block includes an optical component and an end of an optical fiber.

5. Optical component alignment apparatus as claimed in claim 1 wherein the conductive layer includes one of gold, platinum, and silver.

6. Optical component alignment apparatus as claimed in claim 1 wherein the dielectric layer includes material with a coefficient of thermal expansion matched with a coefficient of thermal expansion of the optical block and the supporting substrate.

7. Optical component alignment apparatus as claimed in claim 1 wherein the dielectric layer includes one of silicon oxide, aluminum oxide, and aluminum nitride.

8. Optical component alignment apparatus as claimed in claim 1 wherein the optical block is fixedly positioned on the dielectric layer by one of epoxy, adhesive, and solder.

9. Optical component alignment apparatus as claimed in claim 1 wherein the supporting substrate includes one of ceramic, semiconductor material, conductive material, and insulative material.

10. Optical alignment apparatus comprising:

a supporting substrate having a component mounting surface;

a heatsink positioned on a first area of the component mounting surface of the supporting substrate;

a light generating component positioned on the thermally conductive material, the light generating component defining an optical axis substantially parallel to the component mounting surface of the supporting substrate along which generated light is emitted;

a conductive layer positioned on the component mounting surface of the supporting substrate adjacent the thermally conductive material;

a dielectric layer formed on the conductive layer, the conductive layer and the dielectric layer defining a selected bondline thickness; and

an optical block fixedly mounted on the dielectric layer, the optical block being designed and positioned to receive light along an optical axis substantially parallel with the component

mounting surface of the supporting substrate, the dielectric layer having a coefficient of thermal expansion similar to a coefficient of thermal expansion of the optical block, and the bondline thickness being selected to align the optical axis of the optical block with the optical axis of the light generating component.

11. Optical component alignment apparatus as claimed in claim 10 wherein the light generating component includes a laser.

12. Optical component alignment apparatus as claimed in claim 10 wherein the optical block includes an optical component and an end of an optical fiber.

13. Optical component alignment apparatus as claimed in claim 10 wherein the conductive layer includes one of gold, platinum, and silver.

14. Optical component alignment apparatus as claimed in claim 10 wherein the dielectric layer includes material with a coefficient of thermal expansion matched with a coefficient of

thermal expansion of the optical block and the supporting substrate.

15. Optical component alignment apparatus as claimed in claim 10 wherein the dielectric layer includes one of silicon oxide, aluminum oxide, and aluminum nitride.

16. Optical component alignment apparatus as claimed in claim 10 wherein the optical block is fixedly positioned on the dielectric layer by one of epoxy, adhesive, and solder.

17. Optical component alignment apparatus as claimed in claim 10 wherein the supporting substrate includes one of ceramic, semiconductor material, conductive material, and insulative material.

18. A method of mounting and aligning optical components comprising the steps of:

providing a supporting substrate having a component mounting surface;

positioning thermally conductive material on a first area of the component mounting surface of the supporting substrate;

positioning a light generating component on the thermally conductive material, the light generating component defining a light emitting axis along which generated light is emitted, the light emitting axis being positioned substantially parallel to the component mounting surface of the supporting substrate;

forming a conductive layer on the component mounting surface of the supporting substrate adjacent the thermally conductive material;

forming a dielectric layer on the conductive layer, the conductive layer and the dielectric layer defining a selected bondline thickness;

providing an optical block defining a light receiving axis along which light enters the optical block; and

fixedly positioning the optical block on the dielectric layer with the light receiving axis substantially parallel with the component mounting surface of the supporting substrate, and selecting the bondline thickness to align the light receiving axis of the optical block with the light emitting axis of the light generating component.

19. A method as claimed in claim 18 wherein the step of forming the dielectric layer includes forming the dielectric layer of material with a coefficient of thermal expansion matched with a coefficient of thermal expansion of the optical block and the supporting substrate.

20. A method as claimed in claim 18 wherein the step of forming the dielectric layer includes forming the dielectric layer of one of silicon oxide, aluminum oxide, and aluminum nitride.